

Vandalia Railroad Bridge
Spanning US 40
Indianapolis
Marion County
Indiana

HAER NO. IN-88

HAER
IND
49-IND,
45-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Great Lakes System Support Office
Midwest Field Area
Department of the Interior
1709 Jackson St.
Omaha, Nebraska 68102

HISTORIC AMERICAN ENGINEERING RECORD

Vandalia Railroad Bridge

HAER NO. IN-88

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IND
49-IND,
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Location: Over U.S. 40 (the old National Road),
Approximately 1.7 miles east of the Marion/
Hendricks County line.
Indianapolis
Marion County, Indiana
UTM: 16. 560220. 4398715
QUAD: Bridgeport, Indiana

Date of Construction: 1916-1917.

Engineer: J. E. Starbuck

Present Owner: Conrail, Inc.

Present Use: Railroad bridge, Conrail line, freight and passenger service.

Significance: The Vandalia Railroad Bridge, over U.S. 40 (the old National Road) in Indianapolis, Marion County, is locally significant as an example of early 20th century reinforced concrete bridge design and construction. It was one of two overhead grade crossings built as part of a new railway between Indianapolis and Frankfort, Indiana in 1916-17. It is also significant for the extensive construction of the earthwork in the vicinity of the bridge.

Project Information: The bridge will be impacted by a planned project to add travel lanes on U.S. 40 from the Hendricks/Marion County line eastward to approximately Girls School Road. In order to effect this widening, the Vandalia Railroad bridge will be replaced with a single span bridge that will be just east of and parallel to the existing structure.

The bridge was recorded by Camille B. Fife and Thomas W. Salmon II of The Westerly Group, Inc., RR 1 Box 141, Farmersburg IN 47850.

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Description:

The Vandalia Railroad Bridge is a reinforced concrete arch structure, skewed to the roadway of U.S. 40, with a vertical clearance of 14.3 feet (4.4m) and a useable horizontal clearance of 48.6 feet (14.8m). This single-span masonry structure features a low elliptical arch, whose springing line is presently highlighted by a horizontal line of paint, on the inner face of both abutments. The thickness of the gentle arch ring is emphasized by the frieze above the entrados which approximately follows the curve of the opening. This frieze and the corner of the spandrel above it are highlighted by a projecting concrete band, in a flatter ellipse than the arch. The remains of a sign which once identified the bridge as part of the Pennsylvania system are just barely visible on this element.

The spandrels are solid and decorated with recessed triangular panels at each end. Above a thick, slightly protruding plinth, a sturdy open balustrade lends strength to the parapet design. This devise is separated into seven segments by eight pedestals, those at the extremes of the bridge being larger and adorned with rectangular recessed panels. The dado of the railing is pierced with round-arch topped openings (seven between each pedestal) and capped with a modestly projected coping.

The abutments consist of wing walls, which, at the northwest and southeast are nearly parallel to the roadway, and on the opposite corners are slightly angled away from the vehicular lanes. The latter abutments are slightly shorter than their opposite counterparts. The walls angle sharply down, from the railway level toward the road, ending in a short span of low wall. A thick, projecting coping finishes the treatment.

The railway roadbed was originally built for two tracks, but only the westernmost is currently in place. The only portion of the bridge which is visible from the rail line is the balustrade, which is presently somewhat deteriorated, especially at its southeastern terminus.

Evidence of the concrete construction of the span is visible on the underside of the arch, where four distinct pour segments can be discerned. Leaching and efflorescence have occurred at the cold joints in recent years. The walls of the bridge, in addition to the aforementioned paint, contain various graffiti, however no incised (or raised) date appears, nor is there a dedicatory placque visible.

Historical Information: Located near the geographical center of the State of Indiana, Indianapolis is both the state's largest city and its capital. Founded only a few years after the state itself, it was well-situated to become a regional transportation hub. One of the earliest railroad companies to cross through the city was the Vandalia line, originally part of the Terre Haute & Richmond road, which was chartered in 1846.

Construction on an east-west line through Indianapolis from Richmond in the east to Terre Haute in the west began in 1850. A road from Indianapolis to Terre Haute was finished by May of 1852. Although the eastern section, to Richmond, was taken up by another company in 1851, the western section was eventually expanded through Illinois to St. Louis, Missouri.¹ It was this line that became known as the Vandalia Railroad, probably within a decade of its construction.

Indianapolis would eventually welcome many more rail lines through the city, connecting it with Cincinnati and Columbus in Ohio, with Chicago in the north and St. Louis to the west. However, a long period of inactivity after 1853 dimmed the hopes of those spirited citizens who anticipated that it would become a "City of Railroads."² Eventually it would become known as "Center City", the hub of an active network

¹ Dunn, Jacob P., *Greater Indianapolis, the History...*, Vol I, Lewis Pub. Co., Chicago, IL, 1910, p. 152.

² *Locomotive*, September 22, 1849, quoted in Dunn, p. 152.

of railroads and interurban lines. But in the latter part of the nineteenth century there was a feeling that it had become a sort of way-station between the large cities to the east, west and north. By 1865, even the important railroad shops of the Bellefontaine and the Cincinnati lines had relocated to Ohio.³

The construction of the Union Railway Passenger Station in 1888 brought considerable improvement. All of the railroad lines entering the city received and discharged passengers at this facility, including nearly 200 passenger trains daily. ⁴

The state had anticipated many tangible benefits from railroad activity in Indianapolis, but the results were often disappointing. The Vandalia (or Terre Haute & Indianapolis Railroad) had been given generous terms under its original charter as the Terre Haute & Richmond Railroad Company, which were maintained even after the eastern portion of the line was abandoned to others. For example, the charter stated that, after the stockholders' original investment was returned, with ten percent interest, any profits (allowing expenditures for future contingencies, etc.) over fifteen percent were, " ... to return to the treasurer of the state for the use of the common schools." ⁵

Amazingly, the Vandalia reached this happy situation by the year 1868, without however, returning any funds to the state coffers. Numerous legislative investigations and legal actions were pursued by the state, all fruitless attempts to collect their share of the railroad profits. Finally, in 1900, the Superior Court of Marion County awarded a judgement on behalf of the state of Indiana of over \$900,000. This was affirmed by the Supreme Court of Indiana, but later reversed by

³ Ibid., P. 262.

⁴ Ibid, P. 263.

⁵ Ibid., p. 263-64.

the Supreme Court of the United State on behalf of the railroad. ⁶

By 1912, the Vandalia Railroad, now a part of the mammoth Pennsylvania system, began to plan a new line from Ben Davis (just west of Indianapolis), arching north to Lebanon and Frankfort, Indiana, where it would connect with the Michigan division of the Vandalia. This 41-mile line (constructed by the railroad under the name of the Indianapolis and Frankfort R.R.), was seen as an important link for high-speed train service between Indianapolis, St. Louis and Chicago. Surveys were made in 1914, but action was only taken and construction begun in 1916. Since it was intended for high-speed, heavy traffic, all grade crossings were to be avoided. The Vandalia Bridge over U.S. 40 was built as part of this effort which included 24 under-grade railroad crossings and two overhead spans over highways. ⁷

The technical feats required to construct nearly six miles of elevated fill in the section of the new line from Ben Davis northward (which includes the Vandalia Bridge), were described in a contemporary journal:

The average height of fill is 26 feet, and the total quantity will be about 1,700,000 cu. yd. for the present single-track fill. [in some areas a double track was planned] ... The material for this fill is obtained from a borrow pit about 1½ mi. from the railway, where 70 acres of land were purchased, including a hill. ⁸

⁶ Ibid., p. 265.

⁷ "New Railway in Indiana for the Pennsylvania System", *Engineering News*, December 14, 1916., p. 1132.

⁸ "Long Fill from Borrow", *Engineering News*, October 26, 1916., p. 800.

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Two 70-ton steam shovels worked on either side of the hill, depositing the fill in cars on two loading tracks, which led to a temporary trestle, installed on the line itself (diverted around bridge sites). The material was handled by standard-gage equipment, with six-wheel, 55-ton locomotives hauling 12 and 15-car trains of 12-yard side-dump cars. These cars, which had been loaded by the shovels, then travelled along one of two temporary tracks and up the trestle (an approximately 26-foot elevation), were manually dumped, in sequence, by one or two men from the top of the trestle. Once the desired fill height had been reached, it was widened by a spreader.

The temporary trestle was constructed of outside battered, four-pile bents with log caps and pairs of 28-foot long 10"x16" timber stringers. Only the latter were recovered from the fill before the final track was laid. With four trains, it was estimated that about 6,500 cubic yards of fill could be deposited daily.⁹

The Vandalia Bridge was one of only two overhead highway crossings to be built on this new line. It was located near the beginning of the link, in Wayne Township. (Note: Since the inception of "unigov" in the mid-1960s, Marion County and the City of Indianapolis have been one body.) The bridges along this line were noted by *Engineering News* for their "... use of concrete arches ... and the attention given to the effective appearance or ornamentation ..." ¹⁰

The final appearance of the concrete was enhanced by rubbing down exposed surfaces with a cement brick (made of a 1:3 mix of cement and sand) and water. The surface was then painted with a thin cement grout to give a smooth surface of uniform color. The nearly 50-foot bridge over the Old National Road also had ornamental walls which were cast in place. It was

⁹ Ibid., p. 801.

¹⁰ *Engineering News*, Dec. 14, 1916, p. 1132.

considerably wider than the standard 40-foot arch span on this line. ¹¹

The contractors (Dunn & McCarthy Co., of Chicago) found it necessary to install several concreting plants along the construction route, to speed up delivery to the bridge sites. Most of these were fixed plants with drum mixers and timber elevator towers, although a portable concreting plant was rigged to serve several bridges near Lebanon, Indiana, utilizing a flat car, with a hoisting engine and vertical boiler as well as a separate boiler for the mixer engine. Concrete was handled by means of a locomotive crane with a grab bucket. ¹²

As mentioned before, the Vandalia Railroad's chief engineer served as general supervisor for the construction of the new line, with each of four sections locally supervised by a resident railroad engineer. The bridges were all designed by J. E. Starbuck, the Vandalia's Bridge Engineer.

¹¹ Ibid.

¹² Ibid., p. 1134.

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PROJECT LOCATION

